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## SIR CHARLES BUNBURY.

*The Life of Sir Charles J. F. Bunbury, Bart.* With an Introductory Note by Sir Joseph Hooker, C.B., G.C.S.I. Edited by his Sister-in-law, Mrs. Henry Lyell. With portraits and illustrations. 2 vols. Vol. i., pp. x+371; vol. ii., pp. v+411. (London: John Murray, 1906.) Price 30*s.* net.

SIR CHARLES BUNBURY was a naturalist of the old school; his chief interest, so far as science was concerned, was in botany and geology, his published papers being almost confined to palæobotany. He was an industrious diarist and letter writer, and having travelled extensively in Europe, South America, and Africa, he saw much worthy of record. He had an inexhaustible interest in all that is best worth seeing and knowing; interesting people, and all the aspects of nature and art, were industriously sought out and described. But it is on the lovable personality revealed in his letters and diaries that the attractiveness of the book in large measure depends. He seems to have been the most patient and even-tempered of travellers; his diaries hardly contain a querulous word. He may claim the sundial's motto, "Horas non numero nisi serenas." He was fond of summing up the characters of those whom he met, and these notes, without being unduly laudatory, are free from any trace of ill-nature. These acute and genial sketches are, to our thinking, the best part of the book. The picture which he unconsciously gives of himself is that of a man of breeding and unpretentious distinction, a man one would imagine of quiet dignity, with a simple and direct nature and an affectionate heart. He observed well and described things pleasantly; his only fault as a correspondent seems to have been his lack of humour, but of this we need not complain, for there are no flat remarks intended for witticisms, nor is there anything that rings false or "smart" in his quiet, easy style.

The present volumes are an abbreviation of a fuller version privately printed some years ago; unfortunately, the process of compression has not been sufficiently thorough. Much as we respect and like Sir Charles, we do not want a minute itinerary of his boyish travels, though we might have liked a paragraph showing at how early an age he was alive to the beauty and interest of the world. In the letters of his later life we find the same want of compression by the editor. Most of us are easily satiated with descriptive letters from abroad, and there is in these volumes a good deal of this class of writing which might well have been omitted. In other respects the editing of the book shows some conspicuous merits, especially in such details as biographers are apt to neglect. The volumes are well printed, they are pleasantly light in the hand, and the pages are cut. The date of Sir Charles's birth is given in the proper place, viz., the first line of the book, and lastly there is a full and carefully compiled index.

A large number of letters are addressed to his father and to his stepmother. His strong affection and respect for his father are expressed in a touching letter written in his forty-seventh year (ii., 87). After his marriage to Miss Horner, his father-in-law, Leonard Horner, his sisters-in-law, and his brother-in-law, Charles Lyell, all became regular correspondents.

Lyell seems to have consulted him on botanical matters and to have written fully to him on geological questions suggested by his own researches. We thus get some insight into Lyell's point of view when he was making up his mind about the "Origin of Species" and preparing for his magnanimous change of front with regard to evolution. On this point Bunbury quotes (ii., 227) Sir Joseph Hooker's weighty opinion that Lyell's

> "complete conversion and open avowal of his conversion to the Darwinian theory, at his time of life, and with his established celebrity, and after he had elaborately argued against the same theory in many editions of his great work, is a phenomenon almost unexampled in science."

Sir Joseph was an old friend of Sir Charles Bunbury, and botanists will read with pleasure his tribute to Hooker's genius and character (ii., 156, 226). Kingsley was another friend, and Sir Charles often records his delight in Kingsley's versatile talk and vigorous personality. Kingsley must sometimes have been a little too bloodthirsty for Sir Charles. Still, he quotes (ii., 266) without disapproval Kingsley's rejoicings over the victory of the Germans in the Franco-Prussian war, in which he wishes that Bunsen had been alive to see "the battle of Armageddon. . . . fought, not as he feared, on German but on French soil."

In 1855 he paid a visit to Germany and made friends with many distinguished men. Here he saw Ehrenberg, Encke, Lepsius, Jacob Grimm, "with his fine poetical head," and Ranke with his "expression of shrewdness almost of cunning rather than power." He gives (ii., 68) some account of his meetings with Humboldt, of whom he writes:—

> "He is a delightful old man with all the courtesy and polish of an old Frenchman, and with a vivacity and activity of mind that are perfectly wonderful in a man of eighty-five. He is a little bent, but still hale and fresh looking. . . . He has all the volubility of speech that I have so often heard of, but you may well suppose I was right willing to listen and did not wish to say much. . . . What is particularly striking is his eager interest in all that is going on in all the world of science, his acquaintance with all the newest researches, and his constant desire for fresh information."

Sir Charles Bunbury's letters, and especially his diaries, are of permanent interest as giving contemporary feeling about celebrated books and discoveries. Thus a number of letters tell of the impression produced by the "Origin of Species." There is a curious passage (ii., 217) where he quotes with approval Lyell's surprise in 1867 at Darwin's avoidance of "any reference to a Designer." It would seem that neither he nor Lyell quite understood the Darwinian point of view.

Among the numerous points interesting to botanists may be mentioned Lady Lyell's account (ii., 130) of

a visit to Robert Brown just before his death. "He talked quite calmly and cheerfully, recalling the days when he had sat in the same room in company with Banks, Solander and Dryander, and telling her *where* each of them used habitually to sit." There is, too, a striking letter (ii., 53), written apparently before Hofmeister's discoveries had reached him, in which Sir Charles argues for the connection of the Exogens with the Cryptogams by means of the Conifers, and (ii., 56) for the common nature of spores and pollen-grains.

In 1866 he noted down (ii., 214) the influences which he believed to have guided his development. Four books are mentioned:—(1) Plutarch's "Lives,"[1] which he valued as teaching magnanimity; (2) Hallam's "Constitutional History"; (3) Lyell's "Principles"; (4) Lindley's "Natural System of Botany." The two men of whose influence he speaks are Sir William Napier, "a great genius and a noble though singular character," and Sir George Napier, with whom he stayed at the Cape, "one of the most interesting and most profitable years of my life."

He died in 1886, aged seventy-seven; few men can have lived a long life more kindly and wisely.

F. D.

## HAILEYBURY NATURAL HISTORY LECTURES.

*Life and Evolution.* By F. W. Headley. Pp. xvi+277; illustrated. (London: Duckworth and Co., 1906.) Price 8*s.* net.

THIS well-illustrated and attractive volume, according to the preface, is the final form assumed by a series of lectures delivered before the members of the Haileybury Natural Science Society, the great majority of whom are scholars at the famous Hertfordshire school. From the very nature of the case it aims, therefore, at being intelligible to readers unprovided with a large store of scientific knowledge of their own. It will be equally self-evident that it does not lay claim to be a new gospel. Rather is it an attempt, if we rightly understand its purport, to place before that section of the public which possesses a thirst for scientific knowledge a clear idea of the general structure and mutual relationships of the leading groups of animals and their adaptations to various modes of life, to show in what respects animals resemble and differ from plants, and how to distinguish between these two great primary groups of organisms, and, finally, to attempt a solution of the riddle of the evolution of organic life and of the human intellect.

The task is, of course, a heavy one, and one bristling with difficulties, but if we take into consideration the class to whom he is specially appealing and the amount of space available, we consider that Mr. Headley has come well out of the ordeal. It is not to be supposed that all his opinions will be accepted by each one of his readers, but in most cases, at any rate, he has expressed himself on debatable points with fairness and moderation, and he does not assume the character of an *ex parte* advocate. The great test of a work of this nature is whether it suits the taste of the class of readers for whom it is intended, and in the few instances in which we have been able to put this test to the proof the verdict is favourable. The style and mode of expression are almost everywhere good and interesting, and in all cases free from unnecessary technicalities, while the prevailing tone is that of a thoughtful lover of nature in all its forms. The illustrations speak for themselves.

Passing over the first chapter, which is devoted to the relationships and dissimilarities of plants and animals, attention may be directed to certain speculations in the second chapter—on the sea and its inhabitants—with respect to sedentary animals, which are regarded as having reverted to a semi-plant-like mode of existence. It is pointed out that such sedentary animals are much more numerous in the shore-waters than elsewhere. This the author believes is due to the movements of tides and currents, which bring ample food supplies without the need of any active exertion on the part of the recipients. How comes it, then, that almost all classes of sedentary animals are also well represented in the ocean-abysses, where no such free distribution of supplies takes place? The answer to the puzzle is, in the author's opinion, to be found in the fact that many of the abyssal organisms are stalked, and that they obtain nutriment by possessing the power of bending these stalks, and thus being endowed to a certain limited degree with motion. The proof that this power exists has, however, in many cases yet to be demonstrated. With regard to polyzoans and corals, the suggestion is that they may be fed by a rain of organic débris descending from the surface-waters.

Gills and lungs form the subject of the third chapter, in which reference is made to the occurrence in that hobgoblin-like fish, the Malay Periophthalmus, of an accessory breathing organ in the tail, by the aid of which the creature is enabled to spend much of its time out of water. The various phases of the respiratory function are shown to form an excellent instance of evolution, diffused breathing by the whole surface of the body giving place first of all to localised respiration by means of gills, and these again yielding to lung-breathing in the more active terrestrial forms, some of which have reverted, however, to the water, the ancestral home of all animal life.

Reptiles and their kin and the evolution of the reptile into the bird are discussed at length in the next two chapters. In seeking to find an explanation for the tendency to union between bones originally distinct, which forms such a marked feature of the avian skeleton, Mr. Headley suggests that the fusion of the tarsus with the long bones of the lower part of the legs has taken place in order to strengthen the automatic, pulley-like action of tendons which enables a bird to remain securely perched while asleep. The suggestion seems well founded. Later on we are told how the peculiar, saddle-like articulations of the cervical vertebræ enable birds to bend their necks in

[1] Fortunately for himself he read it in Langhorne's translation, so that he could peruse and re-peruse it so as almost to know it by heart. A boy of thirteen would never have got the essential good of the book if he had known it only in the original.